



August 25, 2011

Maryland Square Shopping Center, LLC
Herman Kishner Trust
c/o Mr. Tom Vandenburg
Dongell Lawrence Finney LLP
707 Wilshire Boulevard, Suite 4500
Los Angeles, California 90017

RE: **ADDENDUM TO THE CORRECTIVE ACTION PLAN FOR GROUNDWATER**
MARYLAND SQUARE PCE-SITE
3661 SOUTH MARYLAND PARKWAY
LAS VEGAS, NEVADA
FACILITY ID No. H-000086

Dear Mr. Vandenburg:

Enclosed please find one copy of the Addendum to the Corrective Action Plan for Groundwater for the above referenced project. The addendum describes the plan for vertical delineation of contamination by continuous core borings and discrete depth sampling, as requested in the Nevada Division of Environmental Protection's (NDEP) letter, dated August 10, 2011, on the Draft Corrective Action Plan for Groundwater. This report is being provided to the NDEP Bureau of Corrective Action (BCA) in electronic Adobe Acrobat format on this date, August 25, 2011, and will be sent in hardcopy immediately.

If you have questions or require additional information, please do not hesitate to contact me or Robert Manriquez, Program Manager, at 619.321.6748. Thank you for your time and consideration in this matter.

Sincerely,
Tetra Tech Inc.

A handwritten signature in black ink, appearing to read 'Tamara Pelham'.

Tamara Pelham
Project Manager
CEM No. 1537, Exp. Sept. 11, 2012
Class A 60505

Enclosure(s) (1) Addendum to the Corrective Action Plan for Groundwater

Dist: 1/Addressee
1/NDEP, Carson City, NV, Attn: Ms. Mary Siders
1/General Growth Properties, Inc., Attn: Ms. Lynne Stella

**ADDENDUM TO THE
DRAFT CORRECTIVE ACTION PLAN FOR GROUNDWATER
MARYLAND SQUARE PCE SITE
3661 SOUTH MARYLAND PARKWAY
LAS VEGAS, NEVADA**

SUBMITTED TO
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF CORRECTIVE ACTIONS
901 SOUTH STEWART STREET, SUITE 4001
CARSON CITY, NEVADA 89701-5249

PREPARED FOR
HERMAN KISHNER TRUST
C/O MR. TOM VANDENBERG, ESQ.
707 WILSHIRE BOULEVARD, 45TH FLOOR
LOS ANGELES, CALIFORNIA 90017

PREPARED BY



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August 25, 2011

TABLE OF CONTENTS

1.0 INTRODUCTION AND BACKGROUND..... 1

2.0 VERTICAL DELINEATION OF PCE CONTAMINATION..... 1

 2.1 CONTINUOUS CORE BORINGS..... 2

 2.2 DISCRETE DEPTH GROUNDWATER SAMPLING 2

3.0 REFERENCES 3

FIGURE 1 Proposed Continuous Core and Discrete Depth Groundwater Sampling Locations

1.0 INTRODUCTION AND BACKGROUND

The Draft Corrective Action Plan (CAP) for Groundwater (Tetra Tech 2011) establishes a process, schedule and criteria by which a remedy for shallow groundwater will be evaluated and proposed for selection. Based on a review of the existing data, the CAP specified additional data required for selection and design of the corrective action as proposed in the Work Plan for Bench and Pilot Tests (Appendix C of the CAP):

- Aquifer testing, including constant rate pumping tests, step-drawdown pumping tests and downhole resistivity testing will be conducted in the target area. Aquifer characteristics such as hydraulic conductivity, transmissivity, and ion and mineral chemistry, is required to profile relevant subsurface features within the target areas.
- Vertical delineation using FloVision® and downhole resistivity surveys in conjunction with previously collected passive bag diffusion sampling results will be used to evaluate contaminant mass migration through the subsurface in the target areas.
- A bench scale test will be conducted to assess the in situ efficacy of the chemical oxidant, sodium persulfate, and determine soil oxidant demand, optimum activator, and metals mobility. If effective, a subsequent pilot test for chemical oxidant injection will be conducted.
- Pilot testing for in situ chemical oxidation with sodium persulfate, air sparging with soil vapor extraction, and ozone sparging with hydrogen peroxide will also be conducted to determine effectiveness and design parameters, including ROI, migration pathways, relative dosing requirements, mass removal rates and rate-of-reaction.
- Soil properties have not been well characterized for the target areas. Data are required for soil properties such as moisture content, porosity, grain size, horizontal and vertical permeability and contaminant distribution data; this data will be useful during well installation for aquifer testing and other pilot testing.

This addendum has been created to clarify the Work Plan for Bench and Pilot Tests (Appendix C of the CAP) and address NDEP's concerns, which were expressed in a letter dated August 11, 2011. NDEP requires that the CAP "(1) Include a description of the number and approximate locations for continuous core borings. These cores should provide detailed lithologic profiles within the proposed treatment area(s). (2) Collect depth-discrete samples of groundwater, using a sampling system that is more specific than the Hydrasleeve can afford" (NDEP 2011). Section 2 of this work plan provides a description and methodologies for vertical delineation of PCE contamination in shallow groundwater beneath the site. Given these additional tasks to improve vertical delineation, the FloVision® and downhole resistivity surveys and proposed pumping test in the vicinity of MW-14 and MW-6, as described in the Work Plan for Bench and Pilot Tests (Appendix C of the CAP), will not be conducted.

2.0 VERTICAL DELINEATION OF PCE CONTAMINATION

Shallow groundwater beneath the site is hosted in predominantly silty and clayey layers interbedded with layers of sand and sandy silt and discontinuous layers and lenses of caliche. Groundwater movement and migration of dissolved phase PCE is largely controlled by these different lithologic units; with greater groundwater velocities and preferential pathways associated with relatively more permeable materials.

In order to target appropriate intervals for pilot tests, groundwater monitoring, and remedy selection, it is important to determine the vertical distribution of PCE within the shallow groundwater. For this purpose and as requested by the NDEP, pilot boreholes will be advanced in two locations west of the main Boulevard Mall building and three locations east of the Boulevard Mall building. The boreholes will be

advanced using continuous coring and discrete-depth groundwater samples will be collected at 5 foot intervals through the interval proposed for testing (that is from the water table down to 60 feet below ground surface). The details on the sampling methods are provided in Sections 2.1 and 2.2 below.

2.1 Continuous Core Borings

Drilling will be performed using a Sonic drilling rig by a licensed drilling company under the supervision of a Professional Geologist. Underground Services Alert (USA) will be notified at least 48 hours prior to drilling for utility and pipeline location. In addition, each borehole will be hand augered to a minimum depth of five feet to clear the location for unmarked lines or utilities.

Locations of the proposed pilot borings are shown on Figure 1. Two locations west of the main Boulevard Mall building are near the wells with historically highest PCE concentrations -- one boring will be advanced approximately 75 feet north of well MW-6 and another boring will be advanced approximately 75 feet south of well MW-13. Three locations east of the Boulevard Mall building are near wells MW-19 and MW-20, along a transect across the PCE plume and at approximately 100 feet from each other.

At each boring location continuous core sampling will be conducted for lithology characterization purposes. Core samples will be gently extruded from core barrels by vibration into clear plastic sleeves to be logged, sampled, photographed or archived for future examination.

Up to 3 soil samples will be collected from the two proposed borings near wells MW-13 and MW-19, located along the central line of the PCE plume. One soil sample will be collected in the vadoze zone and two in the saturated zone. The soil samples will be analyzed for physical properties, grain size analysis, and total organic carbon. To minimize risk of potential DNAPL migration downward, drilling through a confining layer at depth will be avoided. If a confining layer is encountered below 50 feet, the drilling will be stopped at the top of this layer.

Soil retrieved from the borings will be used for observing soil properties such as lithology (using the Unified Soil Classification System), moisture, color, malleability, and grain size. Soil boring logs will be generated from this information and will contain at a minimum the following data:

- Boring identification and location;
- Date Started/Ended, boring diameter, and total depth;
- Name of drilling company, drilling method, and project geologist;
- Sampling method (if applicable);
- Soil description (color, lithology, density or cohesiveness) and USCS description; and
- Depth of the first groundwater encountered.

Other pertinent observations will be also included for each boring (changes in lithology, moisture content, odors, etc).

Discrete depth groundwater samples will be collected from each boring as described below.

2.2 Discrete Depth Groundwater Sampling

To characterize the vertical distribution of dissolved phase PCE, discrete-depth groundwater samples will be collected at 5 foot intervals from the water table down to 60 feet below ground surface. The SonicPoint depth-discrete water sampling system will be used in combination with a Sonic drilling rig. The SonicPoint water sampling system obtains isolated zone water samples using low-flow bladder pumps.

The flush-threaded casing advanced by the sonic drilling method will seal the saturated zone in a cased, zero-annulus environment that reduces the potential for cross contamination. The following procedure will be used to collect up to 10 discrete groundwater samples (with the first sample collected at the water table and other samples at 5 foot intervals below):

- The formation will be cored using a 4-inch sonic core barrel.
- Flush-threaded 6-inch temporary casing will be advanced to the bottom of the cored interval.

- The 4-inch sonic core barrel will be advanced beyond the 6-inch temporary casing and the soil sample will be retrieved. A 3-inch stainless steel screen and riser casing will be vibrated into the cored section of the borehole, allowing the formation to collapse around the screen.
- The 3-inch x 6-inch K-packer will separate and center the 6-inch sonic casing and 3-inch riser.
- A submersible pump will be lowered into the riser and set in the screen. An inflatable packer will be located above the pump on the column pipe.
- The packer will be inflated, isolating the screen section.
- Water sampling will be performed using a low-flow bladder pump.
- The packer will be deflated and the pump removed from the 3-inch screen and riser.
- The screen and 3-inch riser will be vibrated and removed from the formation.
- Flush-threaded temporary casing will be advanced to the bottom of the previously cored and water sampled section.
- The operation will be repeated for each 5 foot interval.

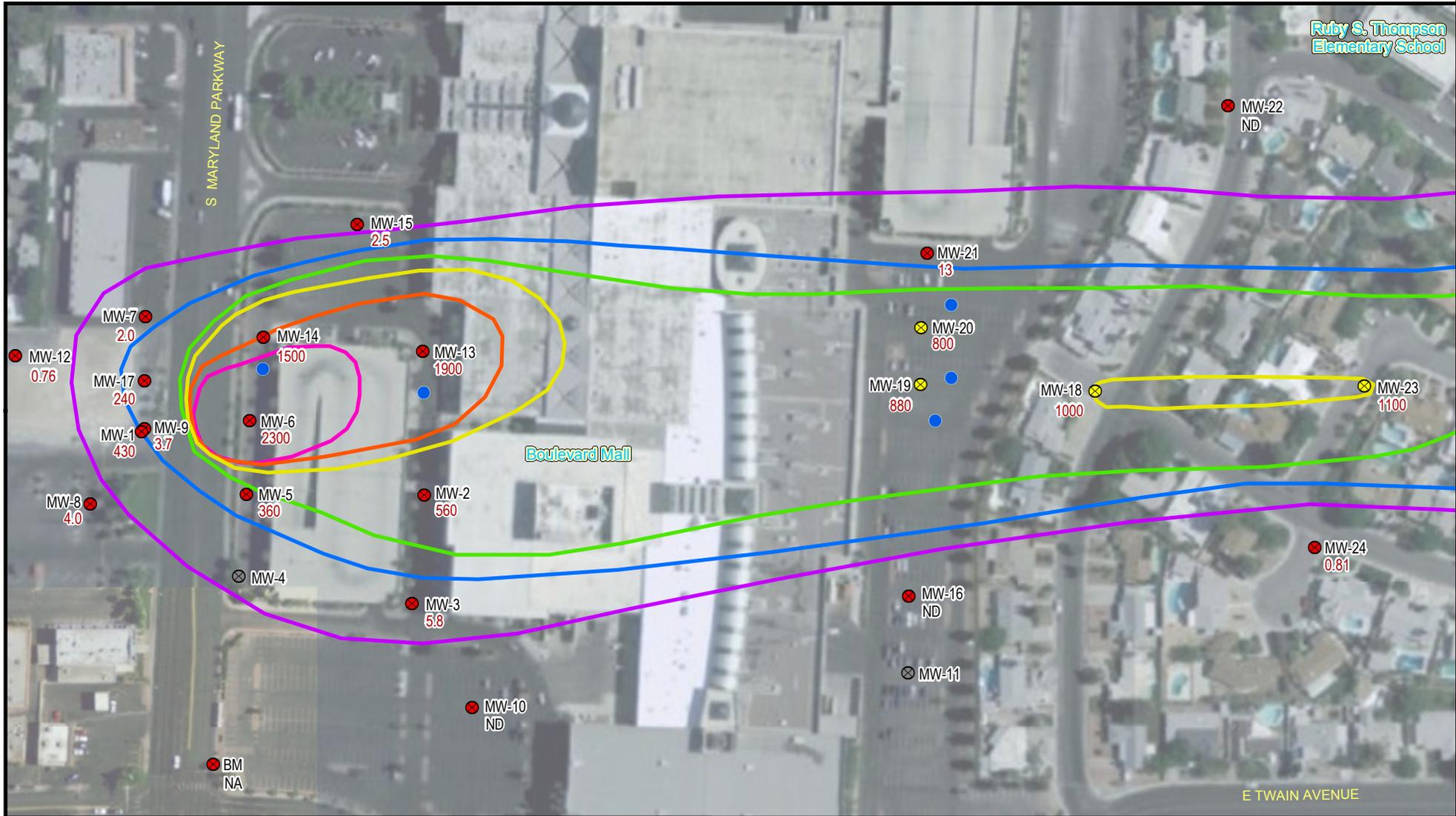
Groundwater samples collected from each boring will be analyzed for PCE, trichloroethene (TCE), cis- and trans-1,2-dichloroethene (DCE), vinyl chloride (VC), dissolved metals (including ferrous ion) and major anions. In addition, field parameters such as temperature, DO, Eh, pH and conductivity will be measured.

Based on results of groundwater sampling, one or two of the borings also may be equipped for multilevel vertical groundwater sampling using a continuous multichannel tubing (CMT) technology. Two of the five proposed soil borings will be used to construct groundwater extraction wells to conduct constant rate pumping tests as described in Appendix C of the CAP.

3.0 REFERENCES

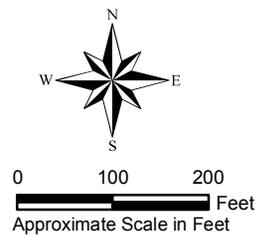
Nevada Division of Environmental Protection (NDEP). 2011a. Letter on the Draft Corrective Action Plan for Groundwater. From: Ms. Mary Siders, NDEP. To Mr. Irwin Kishner and Mr. Tim Swickard. August 10.

Tetra Tech, EMI. 2011. *Draft Corrective Action Plan for Groundwater, Maryland Square PCE Site*. June 14.



Legend

- Proposed Continuous Core and Discrete Depth Groundwater Sampling Location
 - ⊗ Monitoring Well Location (Sampled November 2010)
 - ⊗ Monitoring Well Location (Sampled March 2011)
 - ⊗ Monitoring Well Location (Not Sampled)
 - 2500 ug/L PCE Contour
 - 2000 ug/L PCE Contour
 - 1500 ug/L PCE Contour
 - 1000 ug/L PCE Contour
 - 500 ug/L PCE Contour
 - 100 ug/L PCE Contour
 - 5 ug/L PCE Contour (Dashed Where Inferred)
- | | |
|--------------------|------------------------------|
| ug/L | Micrograms Per Liter |
| NA | Not Analyzed |
| ND | Not Detected |
| NS | Not Sampled |
| PCE | Tetrachloroethylene |
| PQL | Practical Quantitation Limit |
| URS | URS Corporation |
| PCE PQL = 0.5 ug/L | |



MARYLAND SQUARE SHOPPING CENTER
3661 South Maryland Parkway
Las Vegas, Nevada

FIGURE 1
PROPOSED CONTINUOUS CORE AND
DISCRETE DEPTH GROUNDWATER SAMPLING LOCATIONS

TETRA TECH